Proposed Kavanaugh Bike Lanes

Full Report

Executive Summary

Making Kavanaugh Blvd. more comfortable to walk and bike would promote livability, community health, and better connect Stifft Station, Hillcrest, and Heights neighborhoods to the city.[1] Hillcrest may also seek the additional benefits of traffic calming, community cohesiveness, increasing property values, and increasing spending and easing parking congestion in the Hillcrest Business District, as was recently done with bike lanes in the SoMa Business District. The most effective way to encourage ridership is to construct bike lanes (Table 1). Sharrows do not similarly encourage ridership (Table 2) and are not sufficient on Kavanaugh (Figs. 4-5). The 2021 resurfacing project between Markham and Van Buren is an opportunity to make Kavanaugh a Complete Street[2], encouraging ridership, walking/jogging, and decreasing parking demand in the Hillcrest Business District (Fig. 1). A detailed analysis of Kavanaugh's current, unlimited parking use shows parking needs could be met, while shifting vehicular parking to one side of the street (Fig. 2).

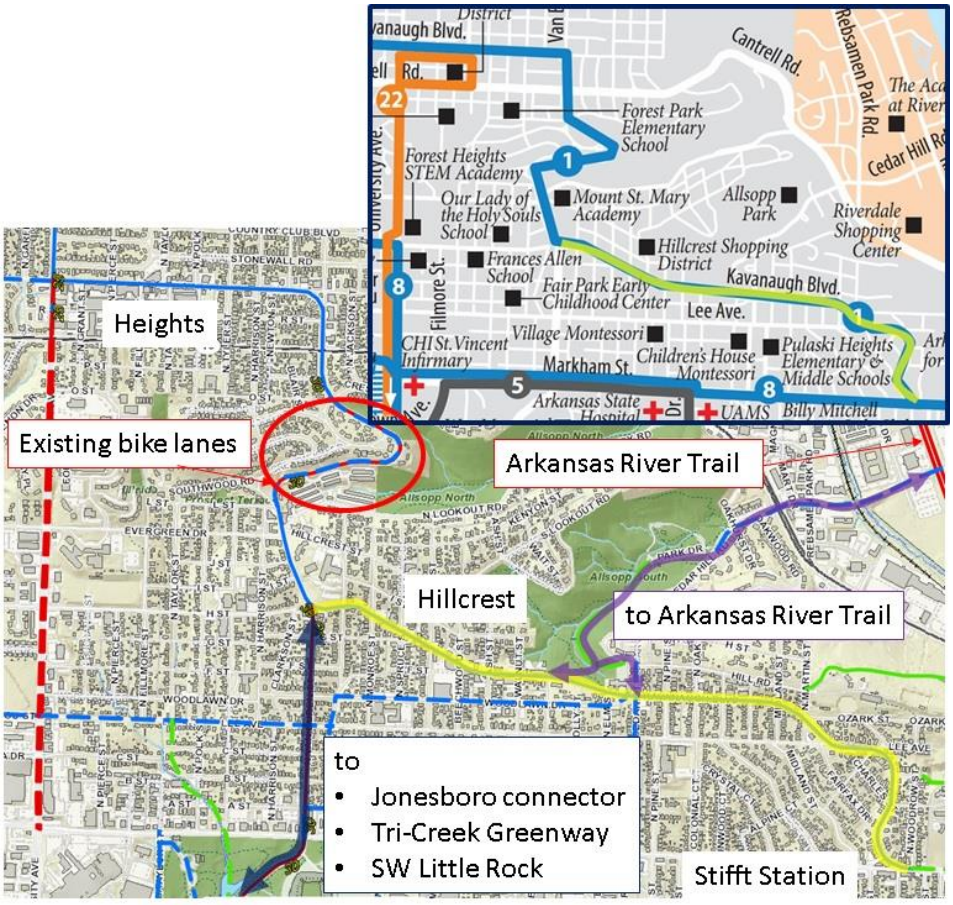

Figure 1. Complete Street considerations in Kavanaugh's resurfacing (yellow highlight) would connect Stifft Station, Hillcrest, and the Heights to each other, to transit (blue box), and connect all of these neighborhoods to downtown, to southwest Little Rock, and to the Arkansas River Trail.

[1] https://www.littlerock.gov/for-residents/bikeped-little-rock/why-bikeped/

[2] https://www.littlerock.gov/media/1374/complete_streets_ordinance_21029.pdf

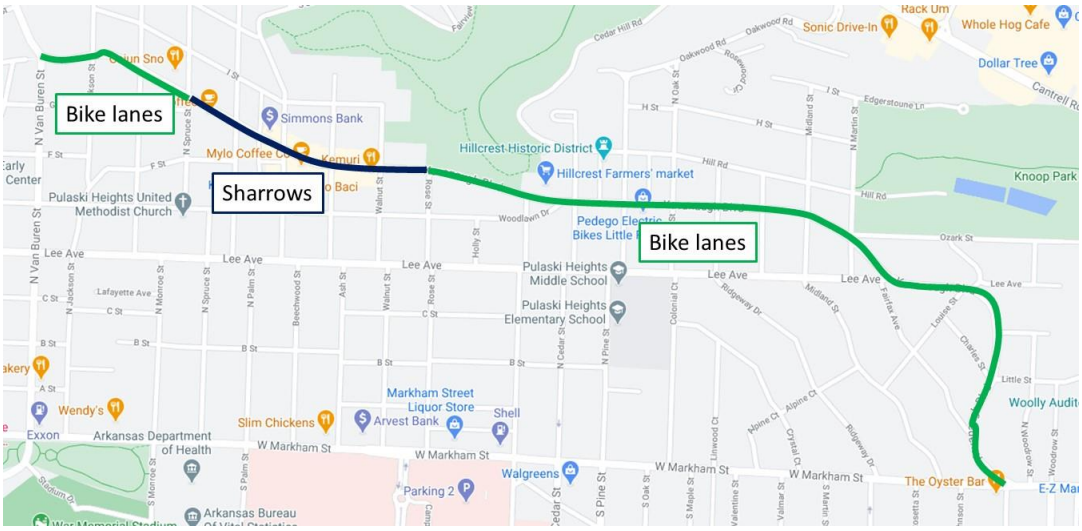

Figure 2. The proposal would create bike lanes on Kavanaugh from Markham to Rose and from Spruce to Van Buren. Sharrows would be retained throughout the business district, between Rose and Spruce.

Current Conditions

Kavanaugh Boulevard between Markham and Van Buren is typically a 40-42 ft. wide street with two lanes separated by a double yellow line. It has a speed limit of 30 mph, but wide lanes (20-21 ft. wide west of Martin if no parked cars) encourage higher vehicular speeds. Kavanaugh has 7.9K vehicles per day just south of Cantrell (outside the resurfacing zone, but the closest ARDOT estimate).[3] Sidewalks are present throughout, but vary in width and condition. Separating Kavanaugh into five zones (Fig. 3), Zone 1 is a long hill and has fog lanes demarcating parking, Zone 2 is also a long hill east of Oak St. but does not have fog/parking lanes, Zone 3 has the Allsopp Park promenade curb extensions, narrowing Kavanaugh to 35 ft. in places, Zone 4 is the business district, and Zone 5 is designed much like Zone 2.

Are Sharrows Good Enough?

FHWA's Bikeway Selection Guide (2019) recommends a protected bike lane for Kavanaugh's speed limit and traffic volume; sharrows do not meet design guidance (Fig. 4). Bike lanes also encourage ridership more than sharrows (Table 2). The greatest disincentive to bicycling in Little Rock is a lack of bike infrastructure (Table 1). The reason this disincentive is so strong is suggested by the next three strongest: a fear of being hit by a car. Given that, it is not surprising that sharrows that put bikes in the same lane as cars are the least effective at encouraging ridership (Table 2).

The above is true generally for Kavanaugh's speed and traffic volume, however, the specific design of Kavanaugh makes it even more dangerous for people on bikes. Sharrow chevrons (double arrows) show all road users where a bike belongs on the road width (Fig. 5). This positioning does not allow a car to pass in the same lane (Fig. 5). In Arkansas, cars cannot legally cross the double yellow line even to overtake someone on a bike and can therefore become "trapped" behind a slower moving bike. The high speed differential on can frustrate drivers and make the exposed rider anxious about erratic driver behavior. The long climb from Markham to Oak exacerbates this speed differential and user conflict for traffic headed toward the Hillcrest Business District. In practice, to calm potentially frustrated drivers attempting to pass her, a cyclist might do one of two things, each dangerous. She may ride close to the

[3] https://www.arcgis.com/apps/webappviewer/index.html?id=8deb09579210490bafb97bd03c3c0792

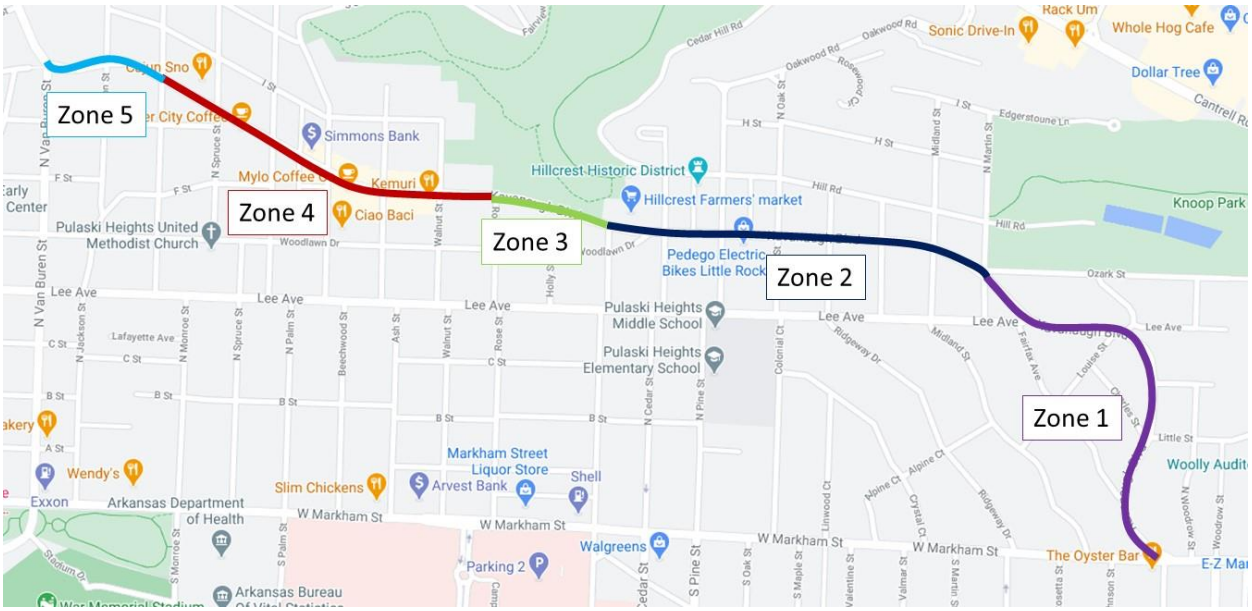

Figure 3. Kavanaugh between Markham and Van Buren can be separated into five zones to highlight differences in their current conditions.

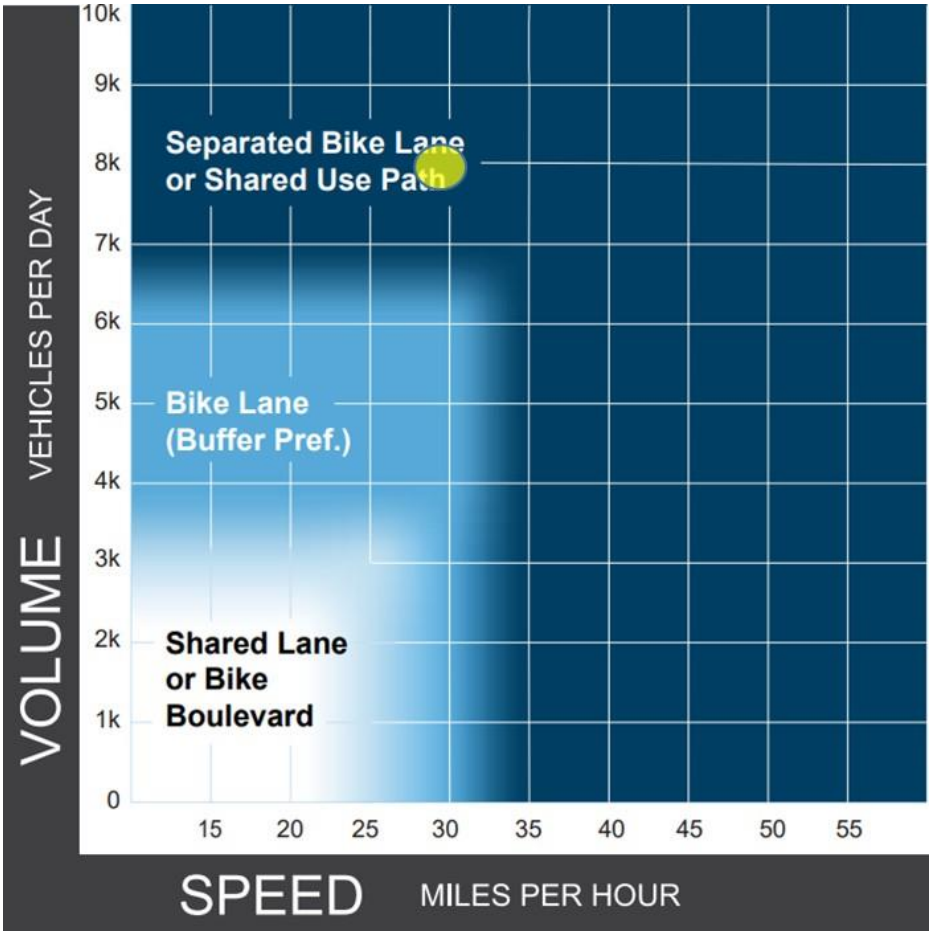

Figure 4. The number of vehicles per day and the speed limit on Kavanaugh (yellow dot).[4]

[4] https://www.littlerock.gov/media/6339/fhwa_bikewayselectionguide_2019.pdf

What keeps you from biking more often? (Check all that apply)	Arkansans	Little Rock
Destinations too far/takes too long to bike	30.7%	28.5%
Unsure of routes to take	16.8%	18.8%
Traffic is too heavy	**70.0%**	**72.1%**
Dangerous intersections	**63.1%**	**64.2%**
Motorists don't exercise caution around cyclists	**76.7%**	**77.0%**
Lack of bike facilities - bike lanes, paths, wide shoulders, etc.	**79.9%**	**83.0%**
Poor condition of bike facilities	27.5%	26.7%
Weather	33.0%	32.7%
Lack of lighted routes or paths	24.2%	19.4%
Personal security	18.6%	18.8%
Need to transport other people or things	30.7%	30.9%
Traveling with small children	13.3%	9.7%
Lack of secure bicycle parking	35.0%	32.1%
Lack of work amenities (showers, lockers, etc.)	25.8%	30.3%
Exposure to air pollution	3.6%	3.6%
Other	10.1%	11.5%
Total Number of Respondents	**894**	**165**

Table 1. The importance of various disincentives to bicycling in Little Rock. Note the top response is a lack of bike facilities and the top four disincentives, by far, have to do with a fear of being hit by a car. If Hillcrest's goal is to increase bicycle transportation, there is no more effective way than creating strong bicycle infrastructure on Kavanaugh as part of this resurfacing project (https://www.littlerock.gov/for-residents/bikeped-little-rock/why-bikeped/latent-demand/).

26. What facility improvements would encourage you to bike more often? Please rate all of the options below using the scale provided.

	High	Medium	Low	Responses
More bike lanes on major streets	74.1 % 641	16.6 % 144	9.2 % 80	865
More bike lanes on minor streets	58.1 % 493	31.4 % 267	10.5 % 89	849
More bicycle paths and trails	84.1 % 726	11.8 % 102	4.1 % 35	863
Paved shoulders on narrow streets	65.5 % 544	24.8 % 206	9.7 % 81	831
More wide outside lanes (easier to share lane with cars)	53.4 % 438	28.9 % 237	17.7 % 145	820
More shared lane markings in travel lanes	49.6 % 402	31.4 % 255	19.0 % 154	811
More buffers between bicyclists and vehicles	74.8 % 633	18.8 % 159	6.4 % 54	846
More on-road bike signage (share the road signs/bike may use full lane signs)	57.3 % 476	25.9 % 215	16.7 % 139	830
Bike accommodation through intersections and interchanges	64.6 % 536	26.5 % 220	8.9 % 74	830

Table 2. Bike lanes on major streets (proposed change) are among the most effective at encouraging ridership. Sharrows (existing) is the least effective (Arkansas Bicycle and Pedestrian Transportation Plan, 2017, pg. A-12).

lane of parked cars. This behavior risks injury from drivers opening their door (a common and dangerous collision known as "dooring") *and* encourages drivers to attempt to overtake the cyclist without crossing the double yellow line, providing less than the legally-required three feet of space between car and bike. Alternatively, she may weave into the parking lane (separated by a white line in Zone 1, Fig. 3). However, regular vehicular traffic (7.9K ADT) and parking lanes at ~15% capacity cause frequent conflicts for the rider, requiring her to weave into the parking lane to avoid traffic and out of the parking lane to avoid parked cars. Unpredictable lateral bike movement and sightlines obscured by roadway curves and large parked cars make navigating Kavanaugh in this way stressful and dangerous. Moving by bike can be dangerous in Little Rock; this project could increase safety for this transportation mode. [5]

Despite all of this, Kavanaugh has relatively high bicycle traffic, demonstrating both its essential function as a local and regional bicycle connector and its potential for higher ridership with appropriate facilities.

Figure 5. Bikes ride uphill on Kavanaugh Blvd. from Markham to Oak. Riders may weave into the parking lane to get out of the way of vehicles but have to weave back into the travel lane to get around parked cars.

Proposed Kavanaugh Bike Lanes

To calm traffic and create space for bike lanes, we propose to narrow traffic lanes and shift parking to one side of the street (Figs. 6&9b). Parking would be retained on the north or east side of the street to protect cyclists when their speed differentials vs. cars is highest (Figs. 6-7).

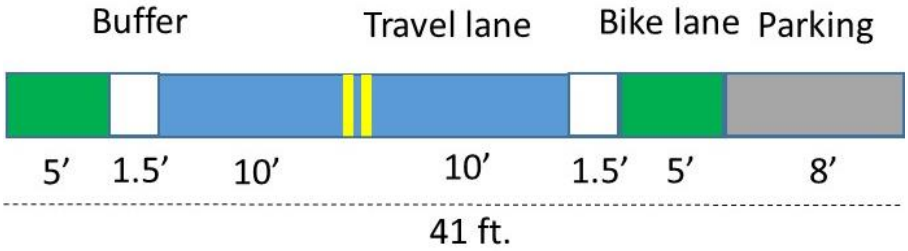

Figure 6. Typical proposed cross section for Kavanaugh bike lanes (measurements approximate).

[5] https://www.littlerock.gov/media/6987/bfc_spring_2020_reportcard_little_rock_ar.pdf

Figure 7. This is a buffered bike lane. The buffer creates more separation between the person on the bike and moving vehicles.[6]

Bike Lanes and Pedestrians

Sidewalk corridors on both sides of the street will be evaluated prior to resurfacing; ramps will be improved to meet ADA standards where necessary. These improvements will occur as part of the resurfacing project regardless of whether or not bike lanes are installed. However, bike lanes would improve safety and comfort for pedestrians beyond ADA improvements. Narrower travel lanes and multimodal placemaking would **slow traffic speeds** (a.k.a. "traffic calming").[7] **Pedestrian visibility** to drivers and the **car vs. pedestrian collision outcomes** are both greatly improved with reduced vehicular speeds (Fig. 8). Proposed changes would also create **greater separation between pedestrians and moving vehicles** on the east-north side (and a physical barrier when cars are parked). Separation between moving cars and pedestrians on the sidewalk currently varies between 0-12 ft. but would be 16-20 ft. and include a greater concentration of parked cars for a physical barrier with the new configuration (e.g. Fig 9).[8] This difference may could increase comfort walking with children, dogs, or other special needs. Narrowing travel lanes will also make **crossing the street safer and more comfortable (Fig. 9).** By significantly narrowing the travel lanes, pedestrians are less exposed when crossing the street and can cross more comfortably in smaller gaps in traffic. Finally, Hillcrest's early morning joggers often run in the street, presumably to avoid tripping on uneven sidewalks. Bike lanes would **create a space in the street for these joggers separated from moving vehicles**.

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[6] https://nacto.org/publication/urban-bikeway-design-guide/bike-lanes/buffered-bike-lanes/

[7] https://www.transportation.gov/mission/health/Traffic-Calming-to-Slow-Vehicle-Speeds

[8] Separation is 12 ft., for example, between Lee and Fairfax Terrace: an 8 ft. wide striped parking area, a curb, and a 4 ft. wide greenspace whereas between Martin and Ridgeway, pedestrians are only separated from moving traffic with a curb. The proposed changes would make typical 8 ft. wide parking, a 2 ft. wide buffer (to prevent "dooring"), a 6 ft. wide bike lane, and a curb (presence or absence of a greenspace would not change).

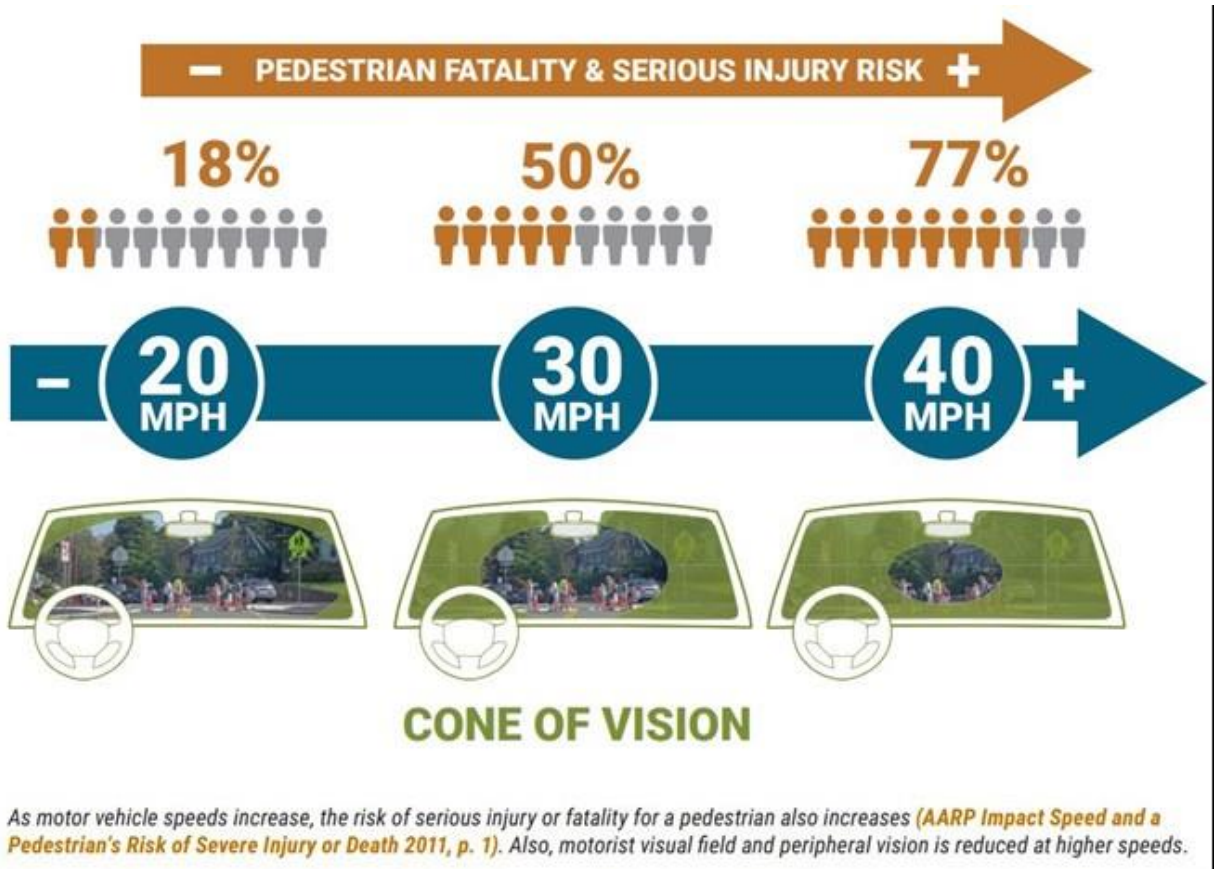

Figure 8. As vehicle speeds increase, drivers naturally focus farther ahead, narrowing their cones of vision and preferentially blinding them to street peripheries (where bicycles, pedestrians, children, and dogs are typically moving). If there is a car vs. pedestrian or car vs. cyclist collision, outcomes are dramatically different for the vulnerable road user with a reduction of just a few mph.

Figure 9a. Even in the well-marked crosswalk of Kavanaugh and Pine, pedestrians have to travel 52 ft. from ramp to ramp (longer than road width because of Pine's new sweeping turn radius). Note too that pedestrians are separated from moving vehicles on the north (left) side sidewalk only by a curb.

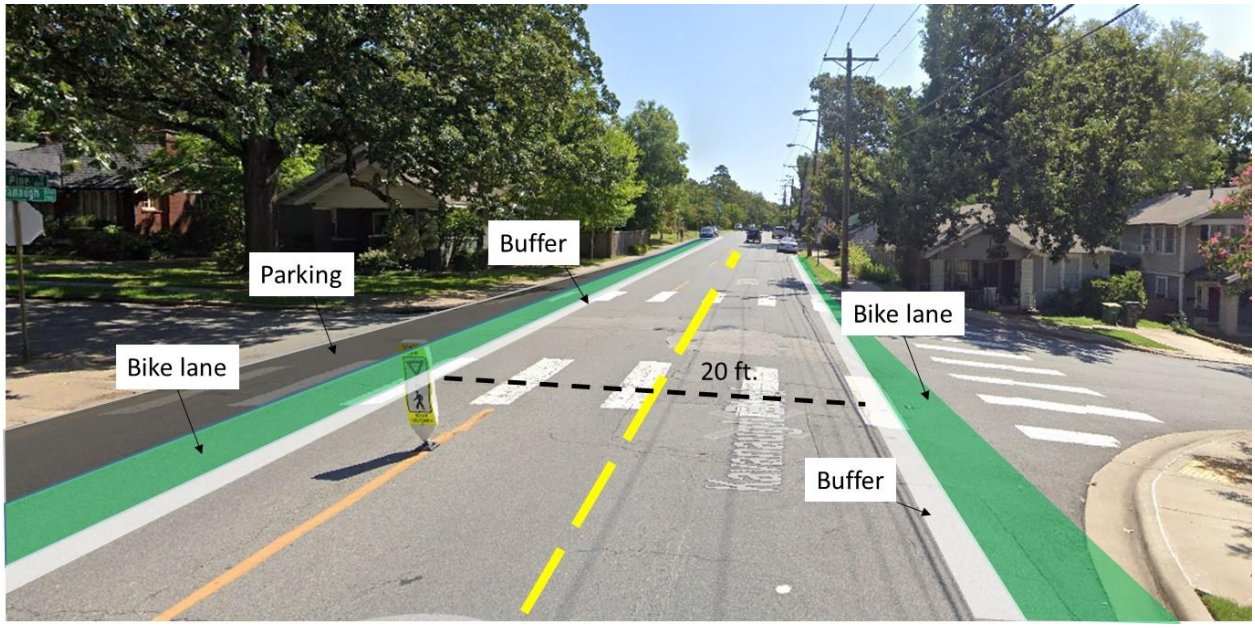

Figure 9b. The current resurfacing project will only affect striping; the distance between ramps will remain 52 ft. However, travel lanes would shrink from 52 ft. (in the absence of infrequent parallel parking) to ~20 ft., making pedestrian crossings safer and more comfortable.

Importance

Traffic Calming: Narrowing traffic lanes calms traffic and creates safer and more welcoming conditions for all road users and the neighborhood.[9] Perhaps the most vital place to calm traffic is in the business district within which bike lanes will not be added. Given that the bike lanes can't continue through the business district, the best way for this project to calm traffic is by continuing the bike lanes to Rose from the east and Spruce from the west. When the narrowed traffic lanes calm traffic leading up to the district on both sides, drivers will be less likely to speed up within the business district because of high pedestrian presence and other mixed use visual cues.

Community Cohesiveness: Giving Hillcrest residents the opportunity to safely and conveniently walk and bike creates face-to-face interactions and chance meetings that promote community.[10]

Increased Property Values: When choosing where to live, the young, creative class workforce wants transportation choice and livability.[11] Bike lanes, especially in Hillcrest's close proximity to the Arkansas River Trail, have the potential to increase property values in Hillcrest, especially on Kavanaugh.[12]

Sustainable Transportation: Transportation is the largest source of Little Rock metro area's carbon emissions; our metro area has the most Vehicle Miles Traveled out of 52 comparable communities.[13] Bike lanes will encourage walking and biking for short errands supporting Hillcrest's local economy over driving more miles to big box stores.

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[9] https://nacto.org/publication/urban-street-design-guide/street-design-elements/lane-width/
[10] i.e. "social capital" Appleyard, D., Gerson, M.S., Lintell, M. Livable Streets, University of California Press, 1981
[11] https://www.theatlantic.com/national/archive/2011/06/americas-top-cities-for-bike-commuting-happier-too/240265/
[12] https://atlanta.curbed.com/2013/8/8/10210634/bike-lanes-property-values-is-there-a-correlation
[13] https://www.littlerock.gov/media/3141/livabilityindex-brochure.pdf

Reduce Hillcrest Business District Parking Demand: When Hillcrest residents can safely bike to the business district for errands, they will more often choose their bike over their car for health, to get fresh air, or because they know they'll be able to find parking once they get to Hillcrest's core.

Increase Retail Sales: Bike lanes increase retail sales. While this has been shown for many communities, one need look no farther than SoMa to see the transformational potential of bike lanes to a district.[14,15] In Hillcrest, lack of convenient parking may dissuade Hillcrest residents or people outside of Hillcrest from shopping in the business district altogether. Cedar Hill is the Arkansas River Trail access point for Hillcrest, Stifft Station, and much of the Heights. Convenient bicycle access may encourage a different clientele, River Trail users, to stay, shop, and recover in Hillcrest.

Connections: Kavanaugh bike lanes would make bicycle commuting to/from downtown from Hillcrest and the Heights more feasible. Kavanaugh bike lanes would make access to the Arkansas River Trail from Stifft Station, Hillcrest, or the Heights more comfortable for all ages and abilities.[16]

Safety: Bike lanes would make all road users safer by slowing vehicular speeds, would make people biking safer by separating them from vehicular traffic, and would make pedestrians safer by creating more space between them and moving vehicles and narrowing crosswalks.

Driver Convenience: On the surface, this reconfiguration appears to serve only people who bike. However, in addition to the other business and neighborhood benefits discussed, drivers are benefitted specifically. Creating a separate space on the roadway for cyclists means that the travel lane is clearer *and* safer for motorists, especially when speed differentials are high when going uphill.

Transit: Transit riders must get to a bus stop from their origin and get from a bus stop to their destination. This "last mile" problem is essential to make transit work and even more important in Little Rock where transit coverage is light. Kavanaugh is the Rock Region Metro Route #1; making Kavanaugh more bikeable increases transit access.

Safe Routes to Schools: Kavanaugh is an important Safe Routes to Schools corridor for Pulaski Heights Elementary, Pulaski Heights Middle School, and Mount Saint Mary's Academy.

Safe Routes to Parks*:* Allsopp Park North, Allsopp Park South, War Memorial Park, Little Rock Zoo, six additional parks along Tri-Creek Greenway.

Vehicular Parking on Kavanaugh

Houses along Kavanuagh close to Stifft Station do not have driveways because of the neighborhood's history as a trolley stop. The Stifft Station Business District also depends on street parking. For these reasons, eliminating street parking on Kavanaugh altogether is not an option. However, is the current quantity of parking needed?

To approach this question with evidence, we quantified parking capacity on either side of the street for each of 19 blocks and then observed though Google Streetview and direct observations how much was used at different time of day and days of the week (Figs. 10-11, Tables 3-5). In brief, **the addition of bike lanes would not make parking demand exceed capacity for any block, day or night (Fig. 9).**

[14] https://usa.streetsblog.org/2015/10/06/salt-lake-city-cuts-car-parking-adds-bike-lanes-sees-retail-boost/
[15] http://www.nyc.gov/html/dot/downloads/pdf/2014-09-03-bicycle-path-data-analysis.pdf
[16] https://www.littlerock.gov/media/3502/nacto_designing-for-all-ages-abilities.pdf

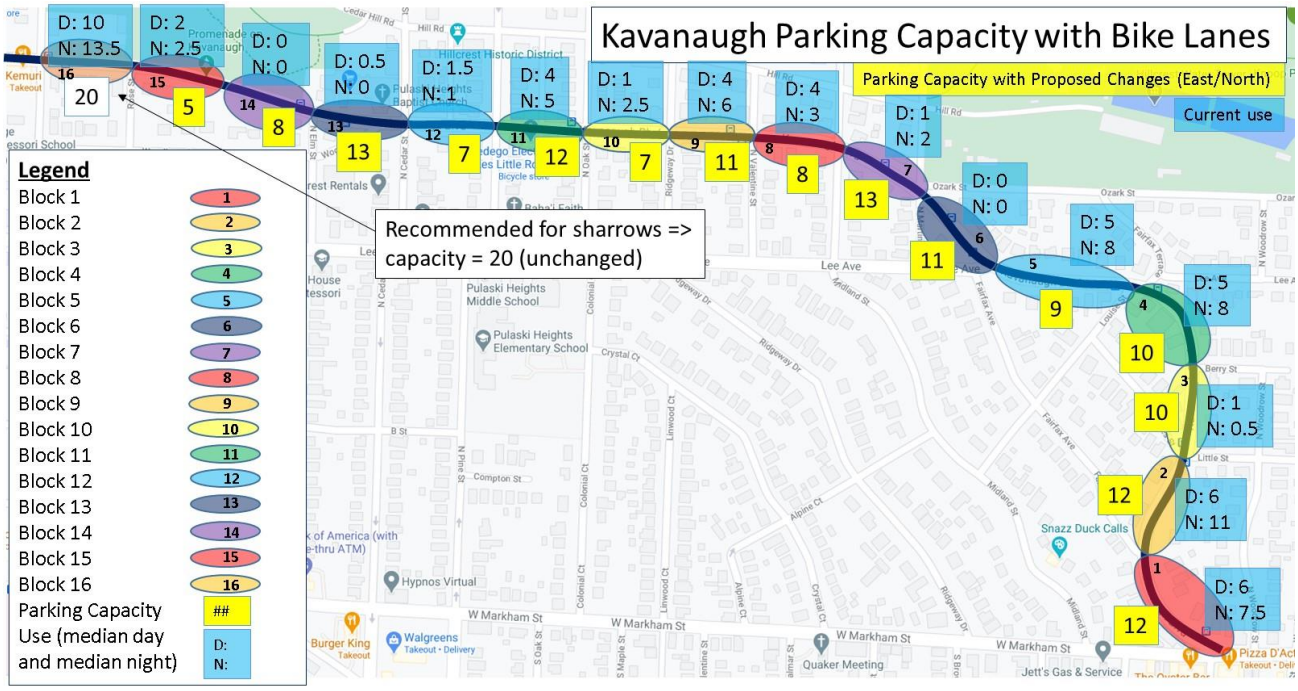

Figure 10. This is a block by block analysis of the parking capacity with the proposed reconfiguration (yellow and white boxes) and the current parking use. Average parking use never exceeds new proposed capacity.

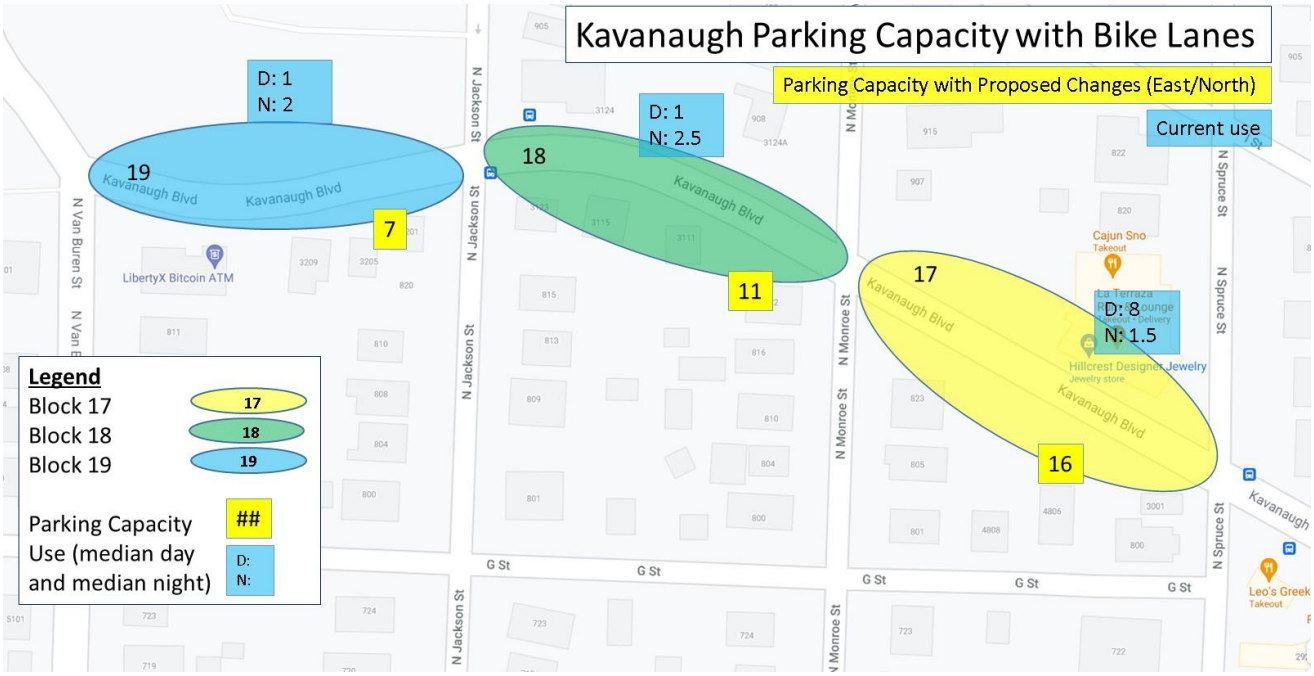

Figure 11. This is a block by block analysis of the parking capacity with the proposed reconfiguration (yellow and white boxes) and the current parking use. Average parking use never exceeds new proposed capacity.

Capacity			
Block	East / North	West / South	Total Existing
1	12	8	20
2	12	12	24
3	10	11	21
4	10	14	24
5	9	15	24
6	11	11	22
7	13	12	25
8	8	12	20
9	11	11	22
10	7	10	17
11	12	9	21
12	7	8	15
13	13	9	22
14	8	13	21
15	5	13	18
16	12	8	20
17	16	15	31
18	11	11	22
19	7	3	10

Table 3. Parking capacity on each side of Kavanaugh, by block, for each of the 19 blocks identified in Figs. 9 & 10.

Conservative Analysis

Each block is ~330 ft. long; using "block" as a small sampling unit ensured that every spot was a short walk to every home on that block (e.g. parking spaces in the Walmart parking lot are up to 570 ft. from the door). This is a conservative analysis for several reasons. First, a resident could park on the neighboring block and her car may still be less than 330 ft. from her home depending on her home's location within the block (i.e. "block" as sampling unit is conservative). Note that Blocks 2 and 5, for which evening capacity is closest to demand, are directly adjacent to blocks with virtually no parking demand (Blocks 3 and 6, respectively). Also residents, especially those on corner lots, could choose to park on the first block of side streets along Kavanaugh which are also underutilized for parking. Still other residents could choose to park in existing driveways. Current parking choice by block reflects behavior when street spots are unlimited, there are several alternatives if/when there is an unusual amount of demand on a block at any given time.

We did not report parking capacity or use for the Hillcrest Business District between Walnut and Spruce because business hour parking demand is universally recognized to be high and is necessary for the success of the business district. Understandably, there would be little will for reducing parking availability there. Given parking demand on Block 16, between Rose and Walnut, we propose to retain current sharrow configuration on this block.

Individual parking spaces are not delineated on Kavanaugh. To assess parking capacity, we used existing "No Parking" signs to assess where the parking zone began and ended. In the absence of those signs, we assumed a 20 ft. buffer between the edge of a cross street and a five foot buffer between the edge of a driveway or other vehicular access point. Each parallel parking spot was allotted 23 lin. ft. unless it was an end spot, which was allotted 20 ft. These are also conservative measurements; parallel parking spots could be reduced to as little as 20 ft. long. Measurements per block are available by request.

Kavanaugh Parking Study - Day Observations

	Google Streetview																	Direct Observation											Totals					
Day	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Unk.	Tues	Mon	Thurs	Thurs	Tues	Sun	Tues	Thurs	Fri	Sat	Sun	Mon						
Time	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	daylig	9:52ar	2:12pr	2:11pr	2:45pr	12:58p	5:34pr	2:51pr	11:08a	8:23ar	9:13ar	12:07p	9:22am						
Block	2007	2011	2011	2013	2014	2015	2015	2016	2016	2016	2017	2017	2017	2018	2019	2019	2019	Mar 3	Apr 5	Apr 8	Apr 15	Apr 20	Apr 25	May 2	May 2	May 2	May 2	May 3	May 3	# of Obs	Mean	Median	StDev	Capacity*	% Capacity
1	7			6	10	8				7		5		6		8	5	4	6	3	6	5	5	5	6	6	8	6	10	21	6.3	6	1.8	12	50.0%
2	5			2	5	3				4		5		1		6	5	6	5	3	7	7	12	7	7	9	11	11	9	21	6.2	6	3.0	12	50.0%
3	3			1	3	2				4		1		1	1	2	0	2	0	3	3	1	0	0	0	0	0	0	1	22	1.3	1	1.3	10	10.0%
4	2			2	4	4				7		4		6	6	4	4	6	5	9	2	4	8	5	4	6	6	8	8	22	5.2	5	2.0	10	50.0%
5	6		6	4	6	3						1		3	7	9	4	4	4	1	3	7	8	4	7	6	5	5	9	22	5.1	5	2.2	9	55.6%
6	0	0		0	1	2				3		0		0			0	0	0	0	1	1	0	0	0	0	0	0	0	21	0.4	0	0.8	11	0.0%
7	3	1		2	1	1				1		1		1			2	2	1	0	2	0	1	1	1	1	1	1	1	21	1.2	1	0.7	13	7.7%
8	4	4		3	6	3				4		1		6			2	4	3	3	7	4	2	2	4	3	2	4	4	21	3.6	4	1.5	8	50.0%
9	3	6		3	7	6				4		5		4			1	3	0	5	2	1	3	3	3	5	6	6	5	21	3.9	4	1.9	11	36.4%
10	1	1		1	1	1				2		1		0			1	2	1	0	0	1	2	2	3	3	3	2	3	21	1.5	1	1.0	7	14.3%
11	4	5		3	4	3				4		7		4			4	3	6	4	5	6	3	5	5	4	6	3	4	21	4.4	4	1.2	12	33.3%
12	4	3		4	3	6	1			3		2		2			0	0	1	1	1	0	0	2	0	1	2	1	2	22	1.8	1.5	1.6	7	21.4%
13	0	2		2	2	4	8			11			1	1			1	0	0	0	0	0	0	0	0	0	8	11	0	22	2.3	0.5	3.7	13	3.8%
14	0	0		0		1	0							0	1	0	0	0	1	3	0	0	2	0	2	0	8	1	0	21	0.9	0	1.8	8	0.0%
15	0	2		0	1	4	4				4			2	3	1	0	1	2	2	0	2	3	1	2	2	2	1	1	23	1.7	2	1.3	5	40.0%
16	9	9		9	13	8	9						9	10	9		11	9	8	11	13	11	15	10	12	14	13	9	11	22	10.5	10	2.0	20	50.0%
17	0	4			8	6		11					9	14	7		14	9	9	11	7	11	2	10	12	5	6	0	2	21	7.5	8	4.2	16	50.0%
18	1	1			0			1	0				0	0	0		3	4	1	3	3	4	1	0	2	3	5	2	4	21	1.8	1	1.6	11	9.1%
19	1	0			0				0				0	0	0		1	1	1	1	1	1	2	1	1	3	2	2	2	20	1.0	1	0.9	7	14.3%

* Note: "Capacity" reflects vehicular parkign capacity by block with bike lanes and sharrows as proposed; bike lanes from Markham to Rose and Spruce to Van Buren, sharrows throughout the business district, from Rose to Spruce, including "Block 16".

Table 4. Parking capacity and daytime observations of parking use by block.

Kavanaugh Parking Study - Night Observations

Day of We	Friday	Wednesd	Tuesday	Monday	Tuesday	Thursday	Saturday	Wednesd	Thursday	Friday	Sunday	Tuesday 8	Wednesd	Friday	Totals					
Time	8:14pm	8:06pm	812pm	8:16pm	8:01pm	8:17pm	8:41pm	3:17am	5:11am	5:11am	7:58pm	8:59pm	9:37pm	5:19am						
Block	March 12	March 17	April 6 202	April 19 2(	April 20 2(	April 22 2(	April 24 2(	26-May	27-May	May 28 20	May 30 20	June 1 202	June 2 202	June 4 202	# of Obs	Mean	Median	StDev	Capacity	% Capacity
1	5	6	6	7	6	8	9	9	9	7	7	8	8	9	14	7.4	7.5	1.3	12	62.5%
2	4	6	10	15	14	9	18	12	11	11	10	11	11	12	14	11.0	11	3.5	12	91.7%
3	0	0	0	1	1	2	4	1	0	0	1	2	0	0	14	0.9	0.5	1.2	10	5.0%
4	4	4	6	9	7	6	8	9	8	7	9	10	9	8	14	7.4	8	1.9	10	80.0%
5	12	5	8	11	9	7	11	7	6	7	8	8	11	11	14	8.6	8	2.2	9	88.9%
6	0	1	0	1	1	0	1	0	0	0	0	2	1	0	14	0.5	0	0.7	11	0.0%
7	3	2	1	1	1	1	0	3	2	2	1	2	2	3	14	1.7	2	0.9	13	15.4%
8	2	4	3	3	2	3	1	3	4	3	1	3	2	4	14	2.7	3	1.0	8	37.5%
9	5	7	5	5	6	5	4	8	8	8	8	5	6	6	14	6.1	6	1.4	11	54.5%
10	2	2	3	2	1	3	2	5	4	3	2	3	2	3	14	2.6	2.5	1.0	7	35.7%
11	8	5	6	5	4	6	3	6	7	3	3	4	4	6	14	5.0	5	1.6	12	41.7%
12	0	0	1	1	0	1	0	1	2	0	2	3	4	3	14	1.3	1	1.3	7	14.3%
13	0	0	7	0	10	3	0	0	0	0	0	1	0	0	14	1.5	0	3.1	13	0.0%
14	0	0	0	0	2	0	1	0	0	0	0	1	0	0	14	0.3	0	0.6	8	0.0%
15	3	0	2	1	3	5	4	2	3	3	1	2	1	4	14	2.4	2.5	1.4	5	50.0%
16	18	14	16	10	13	13	15	13	13	14	15	13	13	15	14	13.9	13.5	1.9	20	67.5%
17	9	2	9	0	10	3	6	0	0	0	3	1	1	0	14	3.1	1.5	3.8	16	9.4%
18	5	1	3	1	2	1	0	3	4	4	2	2	3	4	14	2.5	2.5	1.5	11	22.7%
19	3	3	2	2	2	2	2	2	2	2	2	2	2	2	14	2.1	2	0.4	7	28.6%

* Note: "Capacity" reflects vehicular parkign capacity by block with bike lanes and sharrows as proposed; bike lanes from Markham to Rose and Spruce to Van Buren, sharrows throughout the business district, from Rose to Spruce, including "Block 16".

Table 5. Parking capacity and evening observations of parking use by block.

We used every available image in Google Streetview to quantify parking use along Kavanaugh. Google Streetview images allow us to track parking use over years (to ensure that parking use over the past two months isn't an outlier, e.g. due to COVID) but also has limitations. There is no way to know what time the images were taken (i.e. during or after business hours?) or what day of the week. Also, all Google images are taken during daylight hours, which does not reflect overnight parking needs. To ensure that 24/7/365 demand was addressed, we made supplemental direct observations for which time and day could be assessed. Tables 4-5 summarize these Google Streetview and direct observations. As predicted, parking use differs, and is typically higher, in the evening (Tables 4-5), however, parking rarely approaches parking capacity with bike lanes during the day or in the evening.

Conclusion

Adding bike lanes to Kavanaugh would benefit all street users (people driving, walking, and biking). Traffic calming would also benefit the safety, comfort, and property values of residents along Kavanaugh. Bike lanes would also ease parking congestion in the Hillcrest Business District and have other measurable benefits discussed. Though this study shows that Kavanaugh residential street parking would not be typically or majorly disrupted, there would likely be times where people could not park as close to their residence as they can now. Whether the benefits of bike lanes on Kavanaugh outweigh the costs is a decision for Hillcrest and Little Rock residents.